

IN THE CLAIMS

Please amend the claims as follows:

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- 1 1. (currently amended) A disk drive employing a velocity controlled servo loop, the disk
2 drive comprising:
 - 3 (a) a disk;
 - 4 (b) a head;
 - 5 (c) an actuator arm for actuating the head radially over the disk;
 - 6 (d) a voice coil motor (VCM) for rotating the actuator arm about a pivot, the VCM
7 comprising a coil comprising a VCM resistance R;
 - 8 (e) a back EMF voltage detector for measuring a back EMF voltage across the coil;
 - 9 (f) a current detector for detecting a current I flowing through the coil;
 - 10 (g) an IR voltage detector, responsive to the current I detected by the current detector, for
11 detecting an IR voltage proportional to the current I times the VCM resistance R;
 - 12 (h) a voltage compensator for substantially canceling the IR voltage from the measured
13 back EMF voltage to generate a compensated back EMF voltage;
 - 14 (i) a control voltage generator, responsive the compensated back EMF voltage, for
15 generating a control voltage applied to the coil to generate the current I flowing
16 through the coil; and
 - 17 (j) a stall detector for comparing the current I detected by the current detector to a
18 threshold, wherein a VCM stall condition is detected if the current I exceeds the
19 threshold for a predetermined interval.
- 1 2. (original) The disk drive as recited in claim 1, wherein the current detector comprises a
2 sense resistor in series with the coil.
- 1 3. (original) The disk drive as recited in claim 1, wherein the stall detector comprises:

(a) a clock; and

(b) a counter for counting a number of clock cycles the current I exceeds the threshold.

4. ~~(currently amended) A method of controlling velocity of an actuator arm implementing a~~
velocity controlled servo loop in a disk drive, the disk drive comprising a disk, a head,
the actuator arm, and a voice coil motor (VCM) for rotating the actuator arm about a
pivot, the VCM comprising a coil comprising a VCM resistance R , the method
comprising the steps of:
- (a) generating a control voltage from a command input and a compensated back EMF
voltage;
 - (b) applying the control voltage to the coil to generate a current I flowing through the coil
to move the actuator arm;
 - (c) detecting a back EMF voltage across the coil;
 - (d) detecting the current I flowing through the coil;
 - (e) detecting an IR voltage proportional to the current I times the VCM resistance R ;
 - (f) subtracting the IR voltage from the detected back EMF voltage to generate the
compensated back EMF voltage;
 - (g) comparing the current I to a threshold; and
 - (h) detecting a VCM stall condition if the current I exceeds the threshold for a
predetermined interval.

5. (original) The method of controlling velocity of an actuator arm as recited in claim 4,
wherein the step of detecting the current I comprises the step of detecting a current
flowing through a sense resistor in series with the coil.

- 1 6. (original) The method of controlling velocity of an actuator arm as recited in claim 4,
2 wherein the step of detecting a VCM stall condition comprises the step of counting clock
3 cycles while the current I exceeds the threshold.
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REMARKS

Telephone Interview Summary

On 02/14/04 a telephone interview was held with the examiner to discuss a response to final office action filed on 10/22/03. The examiner indicated he had not received the response after final, and requested the applicant resubmit the response via fax together with another interview request. The applicant resubmitted the response on 2/13/04 together with a request for another interview to be held on 03/09/04. The applicant called the examiner on 03/09/04 for the interview, but the examiner was not available. Accordingly the applicant files herewith a Request for Continued Examination to have the above claim amendments and following remarks considered.

Claim Rejections - 35 USC §102

The examiner rejected claims 1, 3-4 and 6 under 35 USC §102(b) as anticipated by U.S. Patent No. 5,163,430 to Hansen et al. The applicant respectfully disagrees.

Hansen discloses a disk drive wherein the servo control of the actuator arm is implemented as a position controlled servo loop wherein the position of the head is determined in response to servo information recorded on the disk (col. 3, lines 21-35). Acceleration and deceleration curves (FIG. 5) are used to generate appropriate VCM control signal to achieve the desired actuator velocity corresponding to the position of the head with respect to a target track (col. 5, lines 58-61). Hansen is concerned mainly with deriving the optimal acceleration and deceleration curves as determined from various parameters of the disk drive (col. 6, lines 1-41). However, Hansen does not disclose any details concerning a velocity controlled servo loop as recited in the claims for controlling the velocity of the actuator arm in response to the back EMF voltage across the voice coil

when the servo information recorded on the disk is unavailable (such as during ramp loading/unloading).

Since Hansen does not disclose a velocity controlled servo loop in response to back EMF voltage, Hansen does not disclose all of the elements recited in claim 1, including a back EMF voltage detector, a current detector, an IR voltage detector, a voltage compensator, a control voltage generator, or a stall detector. In particular, Hansen does not disclose to implement a stall detector by comparing the current I flowing through the coil to a threshold, and to detect a stall condition if the current I exceeds the threshold for a predetermined interval. Since Hansen does not disclose every element recited in the claims, the rejection under 35 USC §102 cannot be sustained.

CONCLUSION

The above amendments to the claims do not add new matter; the applicant respectfully requests the amendments be entered. In view of the foregoing remarks, the rejections under 35 USC §102 should be withdrawn since Hansen discloses a position controlled servo loop using servo sectors rather than a velocity controlled servo loop using back EMF voltage, and therefore Hansen does not disclose or suggest a back EMF voltage detector, a current detector, a voltage compensator, a control voltage generator, or a stall detector. The examiner is encouraged to contact the undersigned over the telephone in order to resolve any remaining issues that may prevent the immediate allowance of the present application.

Respectfully submitted,

Date: 3/16/04

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on:

3/16/04
(Date)

Howard H. Sheerin
(Print Name)


(Signature)